



# Technical Data Sheet

PLA Matte

**KELVRA**

Engineered FDM Filaments  
Print with Confidence

# Mechanical Properties

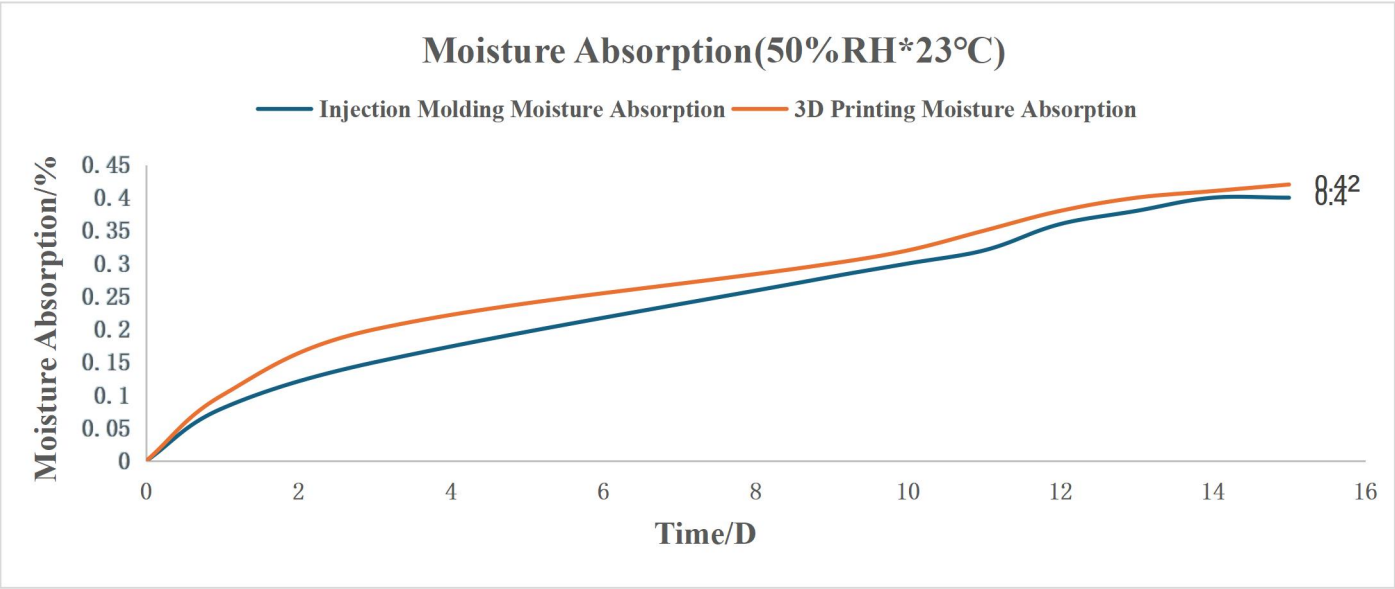
| Property               | Testing Method | Testing Condition | Injection Molding Typical Value | 3D Printing X-Y Axis Typical Value | 3D Printing Z Axis Typical Value | Unit  |
|------------------------|----------------|-------------------|---------------------------------|------------------------------------|----------------------------------|-------|
| Tensile Strength       | ISO 527        | 50mm/min          | 54.8                            | 37.5±4                             | 12.3±2                           | MPa   |
| Elongation at Break    | ISO 527        | 50mm/min          | 5.7                             | 3.6±1                              | 1.1±0.2                          | %     |
| Tensile Modulus        | ISO 527        | 50mm/min          | 2515.7                          | 2469±100                           | 2142.7±100                       | MPa   |
| Flexural Strength      | ISO 178        | 2mm/min           | 78.4                            | 58.9±4                             | 19.4±2                           | MPa   |
| Flexural Modulus       | ISO 178        | 2mm/min           | 3766.7                          | 2876.7±100                         | 2082.5±100                       | MPa   |
| Charpy Impact Strength | ISO 179        | 23°C              | 59.3                            | 23.1±2                             | 2.6±1                            | KJ/m² |
| Izod Impact Strength   | ISO 180        | 23°C              | 52.8                            | 18.4±2                             | 2.2±1                            | KJ/m² |

# Physical Properties

| Property             | Testing Method | Testing Condition | Typical Value | Unit     |
|----------------------|----------------|-------------------|---------------|----------|
| Density              | ISO 1183       | Immersion         | 1.32          | g/cm³    |
| Melt Flow index(MFR) | ISO 1133       | 210°C/2.16kg      | 2-7           | g/10 min |

## Moisture Absorption

| Property            | Testing Method | Testing Condition | Injection Molding Typical Value | 3D Printing Typical Value | Unit |
|---------------------|----------------|-------------------|---------------------------------|---------------------------|------|
| Moisture Absorption | ISO 62         | 50%RH*23°C        | 0.4                             | 0.42                      | %    |



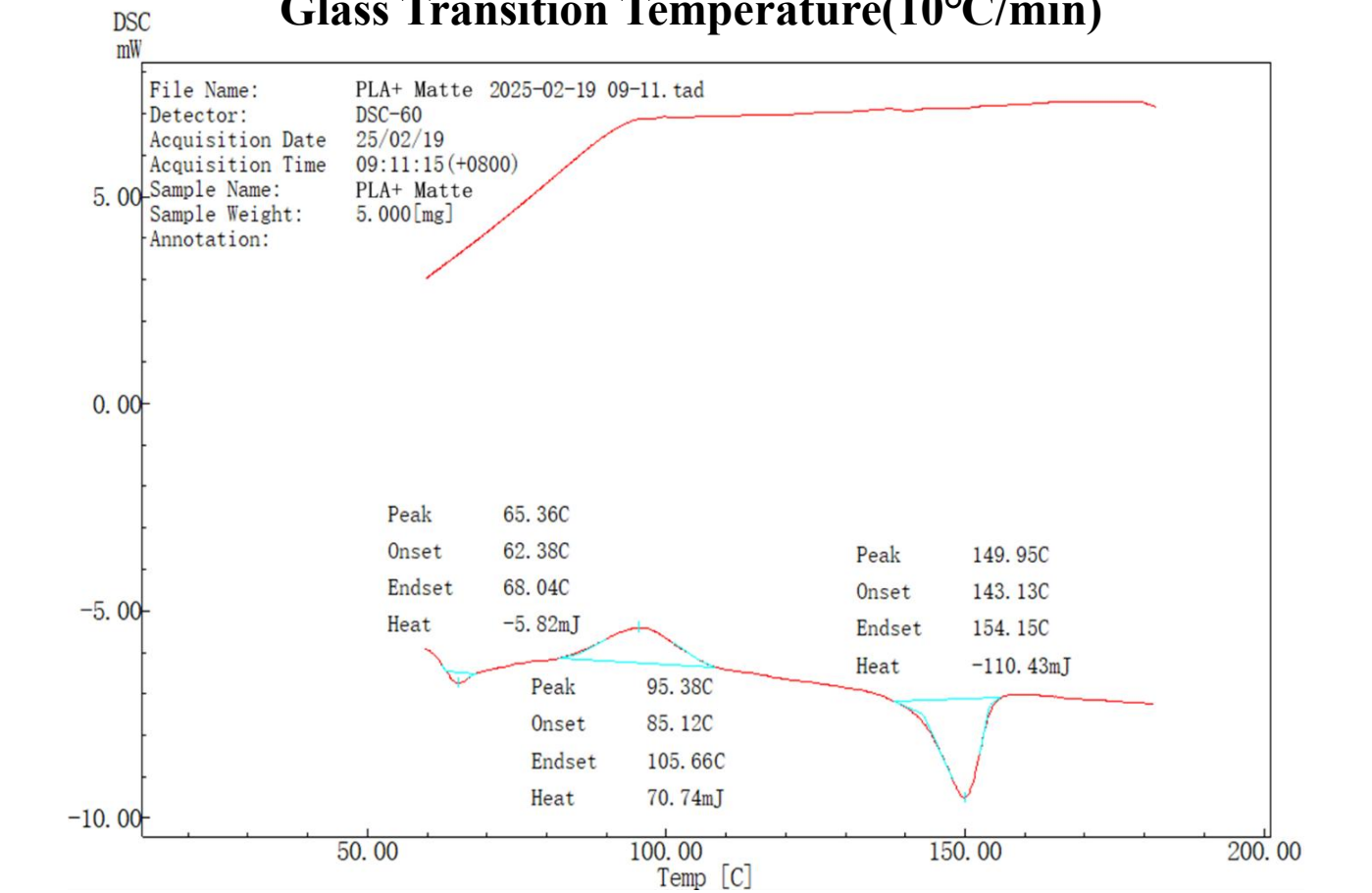
## Chemical Properties

| Property                    | Testing Result |
|-----------------------------|----------------|
| Weak Acid Resistance        | Not Resistant  |
| Strong Acid Resistance      | Not Resistant  |
| Weak Base Resistance        | Not Resistant  |
| Strong Base Resistance      | Not Resistant  |
| Organic Solution Resistance | Not Resistant  |

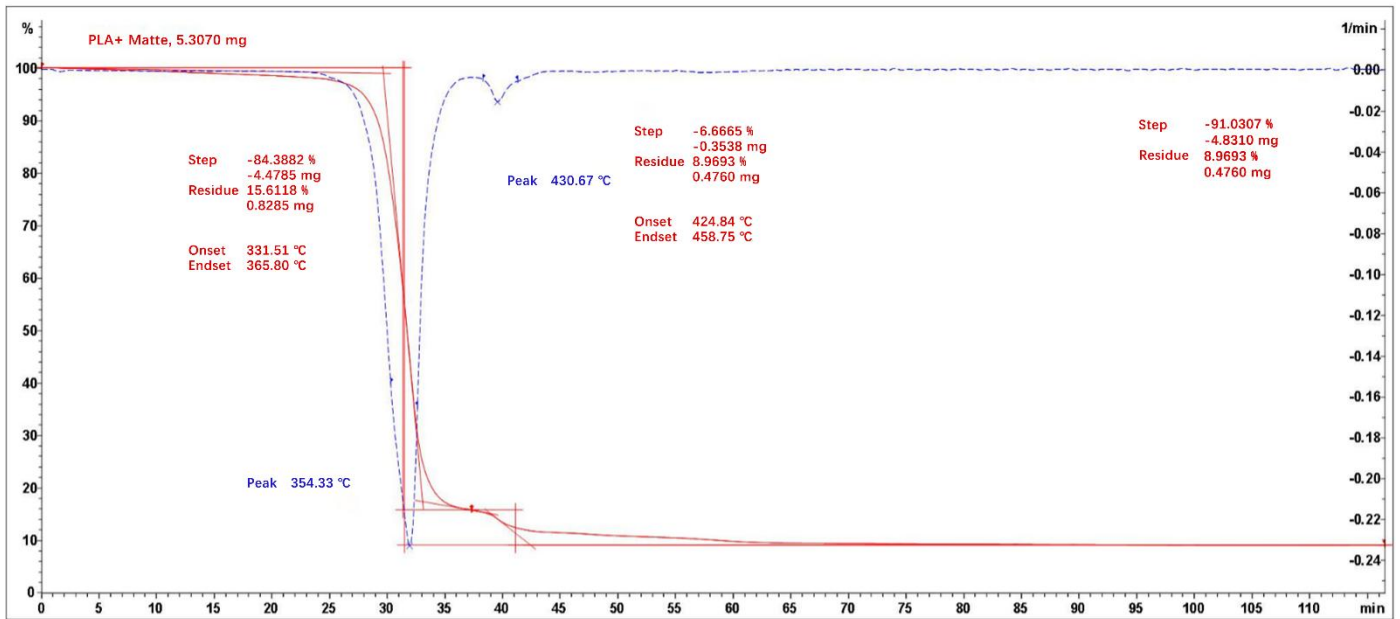
# Thermal Properties

| Property                     | Testing Method | Testing Condition | Injection Molding Typical Value | 3D Printing X-Y Axis Typical Value | 3D Printing Z Axis Typical Value | Unit |
|------------------------------|----------------|-------------------|---------------------------------|------------------------------------|----------------------------------|------|
| Glass Transition Temperature | DSC            | 10°C/min          | 65.4                            |                                    |                                  | °C   |
| Crystallization Temperature  | DSC            | 10°C/min          | 95.4                            |                                    |                                  | °C   |
| Melting Point                | DSC            | 10°C/min          | 150                             |                                    |                                  | °C   |
| Distortion Temperature       | TGA            | 20°C/min          | N/A                             |                                    |                                  | °C   |
| Heat Distortion Temperature  | ISO 75         | 0.45MPa           | 57                              | 55.5                               | 56.9                             | °C   |
| Heat Distortion Temperature  | ISO 75         | 1.8MPa            | 55.9                            | 55                                 | 53.8                             | °C   |
| Vicat Softening Temperature  | ISO 306        | 50°C/10N          | 62.8                            | 61.1                               | 61.8                             | °C   |

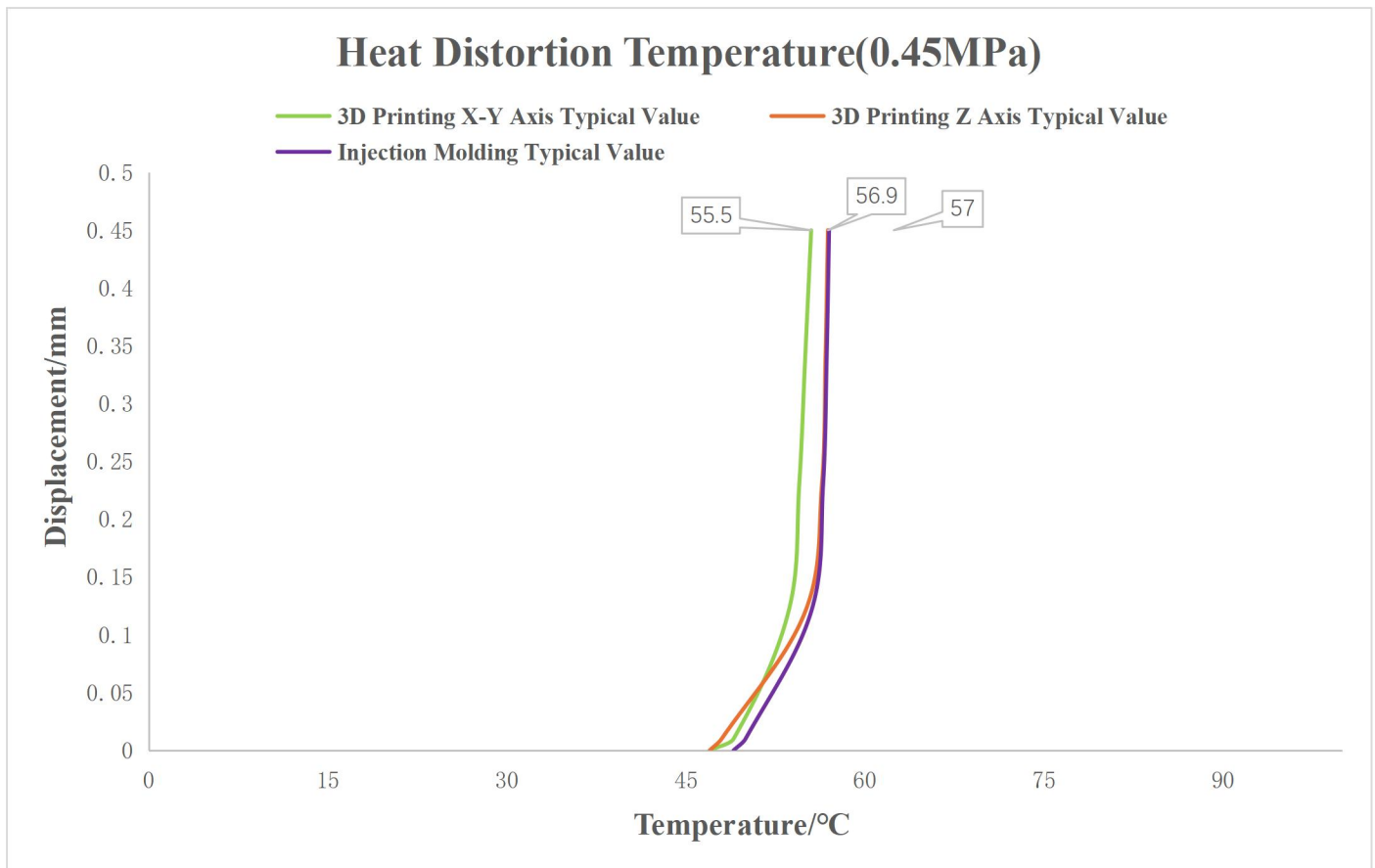
## Glass Transition Temperature(10°C/min)



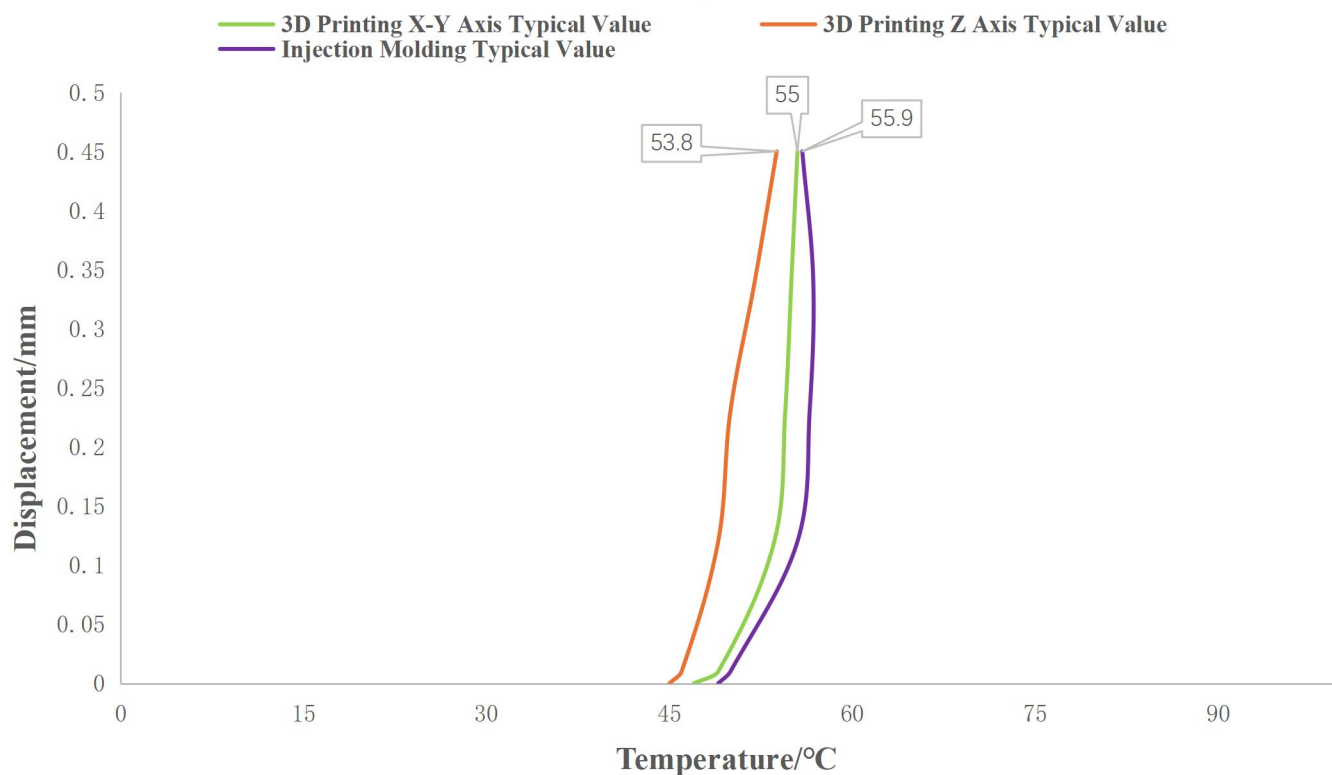
## Decomposition Temperature(20°C/min)



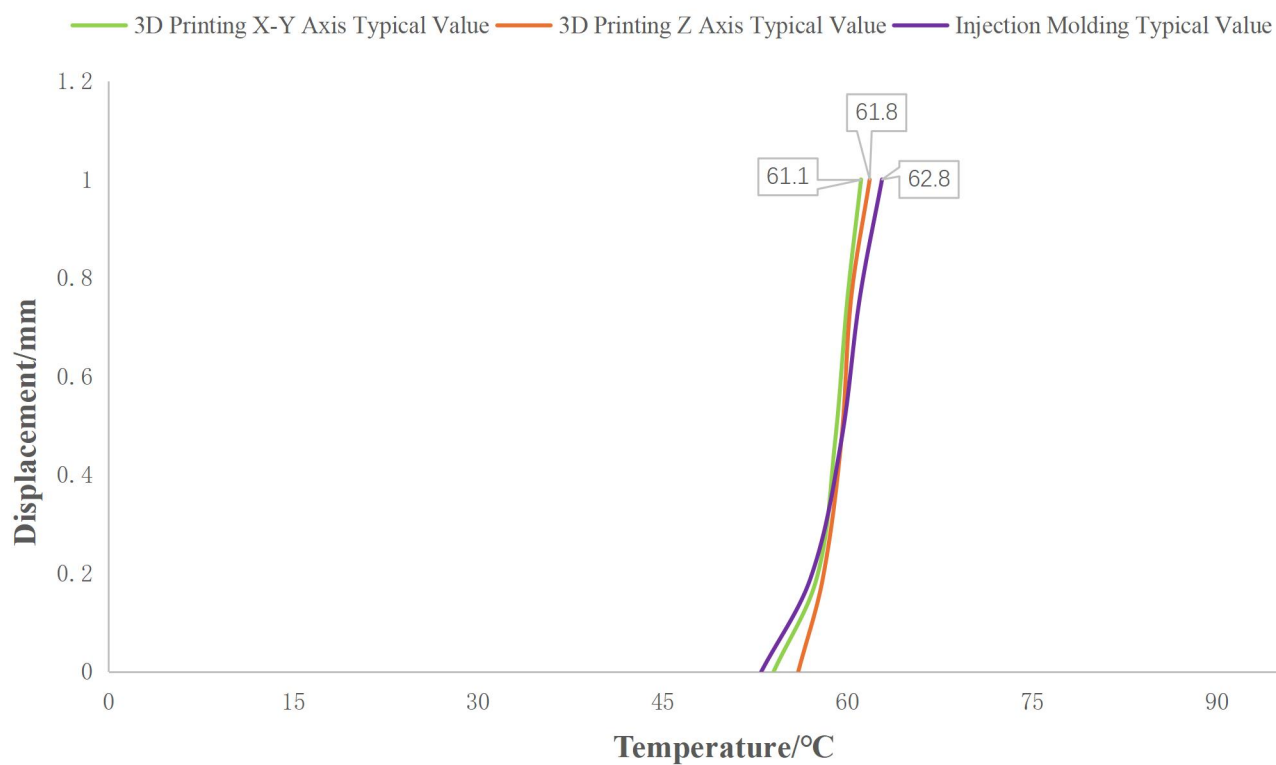
## Heat Distortion Temperature(0.45MPa)



## Heat Distortion Temperature(1.8MPa)



## Vicat Softening Temperature(50°C/10N)



# Recommended 3D Printing Parameters

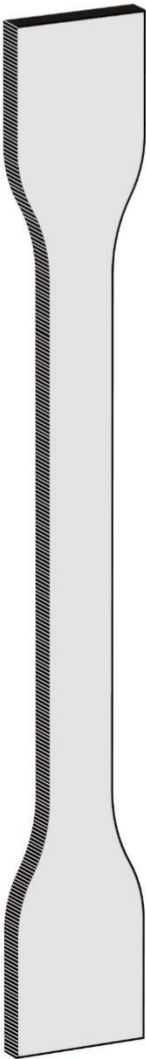
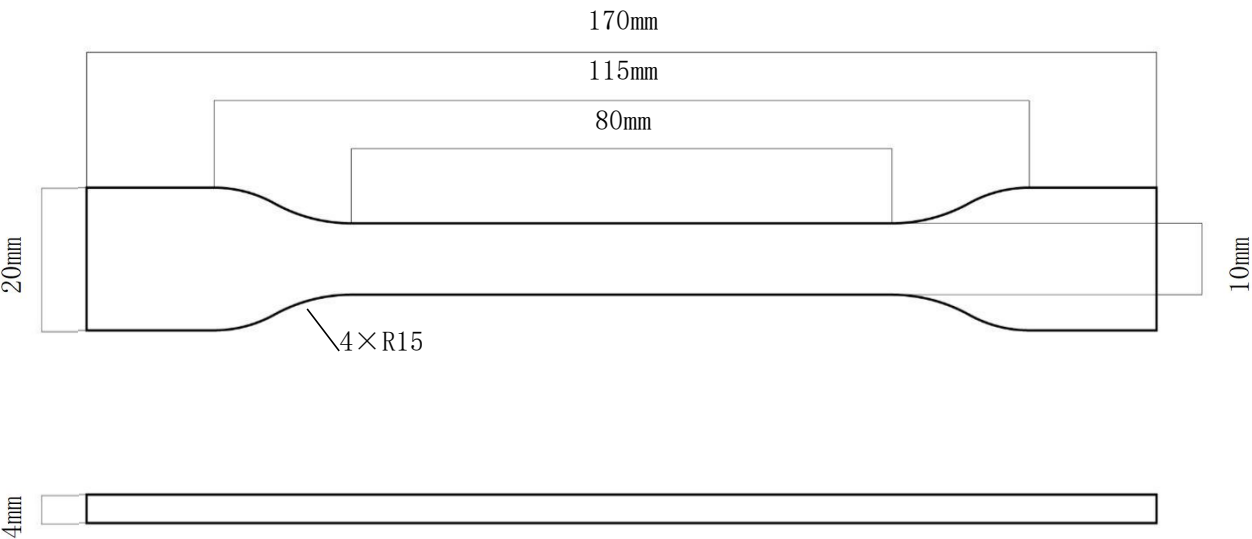
\*Based on 0.4 mm nozzle. Printing conditions may vary with different nozzle diameters.

|                       |              |
|-----------------------|--------------|
| Printing Temperature  | 210-230(°C)  |
| Bed Temperature       | 50-60(°C)    |
| Wall Layers           | 2 Layers     |
| Top and Bottom Layers | 4 Layers     |
| Infill                | 100%         |
| Ambient Temperature   | 25°C         |
| Cooling Fan           | 0-10%        |
| Printing Speed        | 30-50 (mm/s) |
| Nozzle Diameter       | 0.4 mm       |

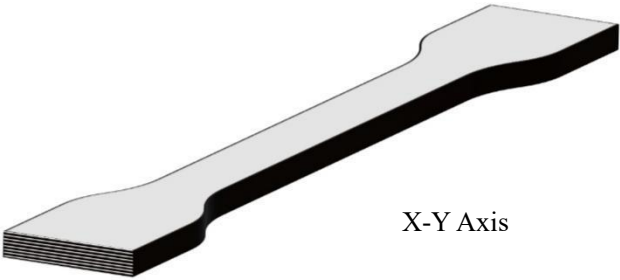
# Standard Sample Dimensions

## Standard Dimensions of Tensile Test Sample

ISO 527 GB/T1040



Z Axis



X-Y Axis

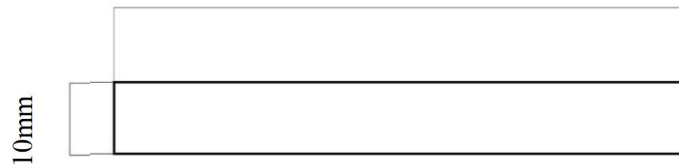
## Dimensions of Flexural Test Sample/Impact Test Sample

ISO 178 GB/T9341

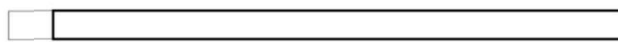
ISO 179 GB/T1043

ISO 180 GB/T1843

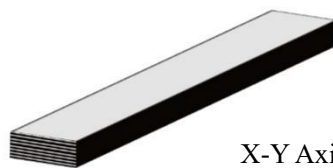
80mm



4mm



Z Axis



X-Y Axis

# 3D Printing Actual Parameters

\*All specimens must be left at room temperature for 24 hours before testing. The parameters are based on the BambuLab P1S 3D Printer.

|                       |           |
|-----------------------|-----------|
| Printing Temperature  | 220(°C)   |
| Bed Temperature       | 55(°C)    |
| Wall Layers           | 2 Layers  |
| Top and Bottom Layers | 4 Layers  |
| Infill                | 100%      |
| Ambient Temperature   | 25°C      |
| Cooling Fan           | 10%       |
| Printing Speed        | 50 (mm/s) |
| Nozzle Diameter       | 0.4 mm    |

## Disclaimer:

The typical values presented in this data sheet are intended for reference and comparison purposes only. They should not be used for design specifications or quality control purposes. Actual values may vary significantly with printing conditions. End-use performance of the material depends not only on materials, but also on part design, environmental conditions, equipment, etc. Product specifications can be changed **without** notice.

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